

IN THE SPECIFICATION:

Please amend the specification on page 4, line 19 as follows:

--Figures 3(a)– 3(b-c) are signal waveform diagrams depicting the relationship between laser optical power as a function of wavelength for three instances of optic laser signals;--

Please amend the specification passage beginning on page 6, line 23 and ending at page 8, line 17 as follows:

--For purposes of description, the basic operating principle of the WLL is shown in Figure 2(a) which depicts an example optic system 10 including a light source such as laser diode 12 driven with both a bias voltage 15 from a voltage bias circuit 14, and modulated data 18 from a data source (not shown). It should be understood, however, that the laser diode does not need to be modulated by any data; its optical output power remains constant. Only the laser wavelength is modulated by the bias current. The laser diode's wavelength is controlled by the bias current in this embodiment, although other applications are possible using feedback to thermoelectric coolers (to vary the wavelength by controlling the laser temperature) or to microelectromechanical optical elements. The laser diode generates an optical (laser light) signal 20 that is received by a bandpass filter 25 or, any frequency selective device including but not limited to: thin film optical interference filters, acousto-optic filters, electro-optic filters, diffraction gratings, prisms, fiber Bragg gratings, integrated optics interferometers, electroabsorption filters, and liquid crystals. The laser diode itself may comprise a standard Fabry Perot or any other type (e.g., Vertical Cavity Surface Emitting (VCSEL)), light emitting

diodes, or, may comprise a Distributed Feedback semiconductor laser diode (DFB) such as commonly used for wavelength multiplexing. Preferably, the laser diode emits light in the range of 850 nm to 1550 nm wavelength range. As mentioned, the bandpass filter may comprise a thin film interference filter comprising multiple layers of alternating refractive indices on a transparent substrate, e.g., glass. As further shown in Figure 2(a), according to the invention, there is an added sinusoidal dither modulation circuit or oscillator 22 for generating a sinusoidal dither modulation signal 27 that modulates the laser bias voltage. The sinusoidal dither signal may be electronically produced, e.g., by varying the current for a laser, or mechanically, by varying the micro-electromechanical system's (MEMS) mirror to vary the wavelength. The dither modulation frequency is on the order of a few kilohertz (kHz) but may range to the Megahertz range. Preferably, the dither modulation frequency is much less than the data rate which is typically on the order of 1-10 GHz. Modulation of the laser diode bias current 15 in this manner causes a corresponding dither in the laser center wavelength. Modulated data is then imposed on the laser, and the optical output passes through the bandpass filter 25. Preferably, the filter 25 is designed with an optical splitter device (not shown) to tap off a small amount of light 29, for example, which is incident upon a photo detector receiver device, e.g., P-I-N diode 30, and converted into an electrical feedback signal 32. The amount of light that may be tapped off may range anywhere between one percent (1%) to five percent (5%) of the optical output signal, for example, however, skilled artisans will appreciate any amount of laser light above the noise level that retains the integrity of the output signal including the dither modulation characteristic, may be tapped off. The remaining laser light passes on through the filter 25 to the optical network (not shown). As

the PIN diode output 32 is a relatively weak electric signal, the resultant feedback signal is amplified by amplifier device 35 to boost the signal strength. The amplified electric feedback signal 37 is input to a multiplier device 40 where it is combined with the original dither modulation signal 35. The cross product signal 42 that results from the multiplication of the amplified PIN diode output (feedback signal) 37 and the dither signal 35 includes terms at the sum and difference of the dither frequencies. The result is thus input to a low pass filter device 45 where it is low pass filtered and then averaged by integrator circuit 48 to produce an error signal 50 which is positive or negative depending on whether the laser center wavelength is respectively less than or greater than the center point of the bandpass filter. The error signal 50 is input to the laser bias voltage device ~~45~~ 14 where it may be added (e.g., by an adder device, not shown) in order to correct the laser bias current 15 in the appropriate direction. In this manner, the bias current (and laser wavelength) will increase or decrease until it exactly matches the center of the filter passband. Alternately, the error signal 50 may be first converted to a digital form, prior to input to the bias voltage device.